DC/DC Boost Converter Compensator Design

For DC/DC Boost Converter whose Mathematical model developed as in *https://www.mathworks.com/matlabcentral/fileexchange/170121-dc-dc-boost-converter-mathematical-model?s_tid=srchtitle* or in *https://github.com/yes42d/DC-DC-Boost-Converter-Mathematical-Model* , a Compensator that can provide desired response for specifications of:

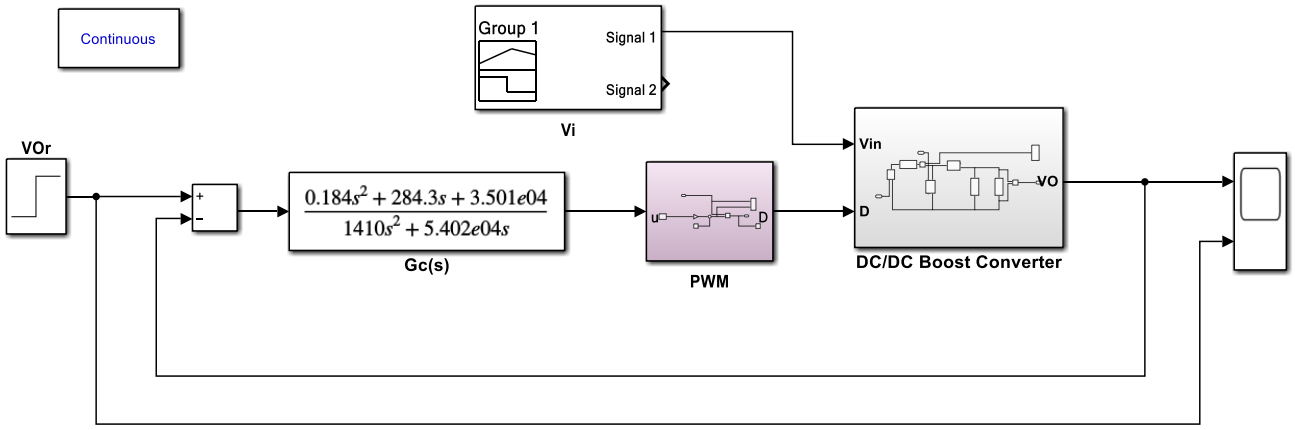
Phase margin: 58.5931^{o} (Corresponds to percent overshoot of 10%)

Bandwidth: $52.3233\ rad/sec$ (Corresponds to settling time of 0.15 sec)

Steady Stare Error: 0 for step input

A compensator (PI+Lag)can be designed using time domain technique (Root locus) or frequency domain technique (Bode plot).

$$G_c(s) = \frac{259.5\ s + 1.41 * 10^3}{s} \frac{s + 134.9}{s + 38.31}$$



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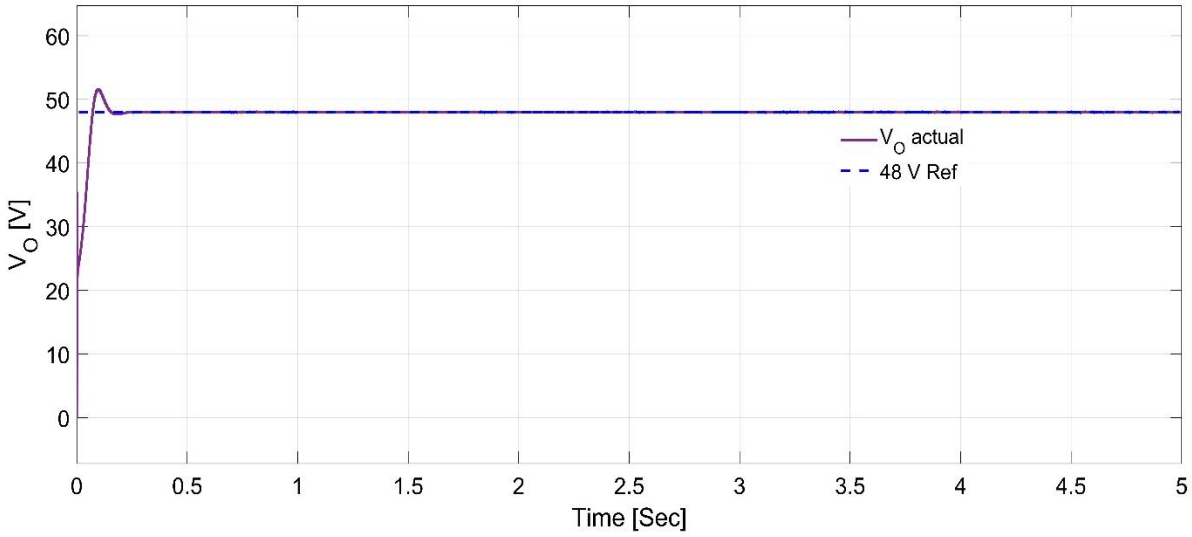
For step-by-step design report or for questions about how to change the compensator according to your design specification, you can email me for further discussion via

yes42d@gmail.com

Response of DC/DC Boost converter for constant 24V input



Response of DC/DC Boost converter for varying input of between 24V and 28V